

Ohio EPA Major Concerns with South Dayton Dump OU1 Feasibility Study
August 5, 2011

- 1) The cap design as presented in the Feasibility Study does not comply with state solid waste landfill ARARs for storm water management. The Feasibility Study needs to provide more detail on storm water management. At a minimum, the Feasibility Study needs to address the following:
 - Alternatives 2 and 3 propose a storm water sedimentation basin to be constructed where the Small and Large ponds are located, which is within the central portion of the site, over an area which is to be included under the cap. Ohio solid waste rules prohibit ponding over areas where waste is present:
 - o OAC 3745-27-19(J)(1) -- The owner or operator shall ensure that surface water at a sanitary landfill facility is diverted from areas where solid waste is being, or has been, deposited. The owner or operator shall ensure that a sanitary landfill facility is designed, constructed, maintained, and provided with surface water control structures that control run-on and runoff of surface water. These surface water control structures shall ensure minimal erosion and infiltration of water through the cover material and cap system. These surface water control structures shall be designed in accordance with rule 3745-27-08 of the Administrative Code.
 - o OAC 3745-27-19(J)(3) -- If ponding or erosion occurs on areas of the sanitary landfill facility where waste is being, or has been, deposited, the owner or operator shall undertake actions as necessary to correct the conditions causing the ponding or erosion.
 - o OAC 3745-27-11 (H)(2) – The owner or operator shall install the required surface water control structures including permanent ditches to control run-on and runoff and sedimentation pond(s), as shown in the final closure/post-closure plan, and as necessary, grade all land surfaces to prevent ponding of water where solid waste has been placed and institute measures to control erosion.
 - The FS need to include more detail and conceptual design figure(s) for placement of ARAR-compliant storm water management structures. The figure(s) should clearly show where run-on and run-off control and sedimentation structures will be located, noting that the sedimentation pond(s) must be located outside the area to be capped (i.e.; cannot be located over cap and/or waste).
 - The FS needs to include more detail on how the alternatives will address best management practices (BMPs) in order to meet water quality criteria associated with City of Moraine storm water management ordinances. Compliance with these ordinances is necessary to meet Ohio's storm water management NPDES rules.
 - In Alternative 2, storm water management for the MatCon cap area includes multiple inlets through the cap for storm water drains which then travel beneath the cap. The inlets will be problematic for cap O&M in terms of maintaining a good seal. In addition, the integrity of

the storm water sewers installed beneath the cap and within waste will be critical. The FS does not discuss how these storm water drains and inlets will be monitored and does not include an evaluation of other methods for managing storm water which would not rely on installation of storm water drains beneath the cap. An alternative storm water management approach needs to be developed for the MatCon area.

- Valley Asphalt as an asphalt paving material operation is required to comply with NPDES rules under the industrial storm water general permit. Since Valley Asphalt will be located over the MatCon cap under Alternative 2, the FS needs to include and discuss the best management practices that will be employed to comply with industrial storm water general permit requirements for asphalt manufacturers.

2) The FS needs to demonstrate that Alternative 2 can be safely implemented in order for this alternative to be eligible for selection. Issues concerning the protection of on-Site workers and visitors, that need to be addressed in detail include:

- Landfill gas -- The FS needs to address how landfill gas (LFG, including VOC vapors) will be safely managed in the MatCon area to protect on-site workers and visiting customers, given the FS's proposal to employ only passive venting of LFG. The discussion should include a figure depicting conceptually how this will be accomplished.
- Valley Asphalt wells -- Under Alternative 2, Valley Asphalt will remain on-Site, over part of the MatCon cap. It was confirmed during our VI site visits in June that Valley Asphalt is still using well water in buildings where people are working. CRA's statements that people are not using the water as a potable source are not acceptable. There has been no demonstration that there is anything preventing the water in the sinks from being used as drinking water. In addition, ingestion is just one pathway to be considered for the well water; other pathways that should be considered include volatilization from toilets and sinks. Also, a 10-4 risk goal for the Valley Asphalt wells as stated in US EPA comments is unacceptable; the Ohio risk goal is 10-5. The 10-5 tap water risk level for naphthalene is 1.4 ug/l which is less than or very close to the measured concentration of naphthalene in Valley Asphalt Well 2 of 1.6 ug/l.
 - o The contaminant concentrations in the Valley Asphalt wells need to be verified.
 - o Details of institutional or engineering controls adequate to prevent the tap water from being used as drinking water need to be provided
- Institutional controls -- To protect workers and visitors to on-site businesses, an environmental covenant alone is inadequate. The institutional controls mentioned in the FS, particularly zoning restrictions, will not control day-to-day activities that would endanger "potential receptors" or the cap. More detail is necessary on what kind of institutional controls would be used to control the actions of on-Site workers or visitors, such as ingestion of tap water at Valley Asphalt, or maximum vehicle weight loads on the MatCon cap.
- Soil vapors --
 - o Soil gas and landfill gas have not been adequately investigated.

- The remedial alternatives do not include a permanent remedy for soil gas.
- Throughout the OU1 RI/FS report it is stated that LFG and soil vapor will be addressed outside the RI/FS, through the current vapor intrusion study. The vapor intrusion study and the proposed potential sub-slab systems are temporary mitigation actions to address current risks from LFG and soil vapors. They are not permanent solutions. Additional investigation is needed outside of the buildings to address the source of the LFG and soil vapor problem(s), and over the rest of the site, focusing on where elevated levels of soil gas and LFG have previously been measured (for example GP02-09 and GP03-09.) This investigation is particularly important since the only approach to managing LFG evaluated in the FS is passive venting.
- CRA's response to Ohio EPA's comment #8 states that there will be additional study of LFG and soil gas beyond the VI study, recognizing that the VI study is designed to address current risk not overall site concerns.

“The Respondents have agreed to complete a Vapor Intrusion (VI) Study to identify current risks via the indoor air pathway to receptors on and adjacent to the Site. Additional investigation of LFG generation potential within the landfill will occur as part of RD. “

However, this statement is not incorporated into the FS report. Even if it was, the FS needs to demonstrate that Alternative 2 is capable of providing long-term protection of human health and the environment in order to be eligible for selection. This includes the health of workers and patrons of the businesses that would remain on-Site under this alternative.

- 3) Site reuse -- Lack of consideration of any potential future reuse of the site, the whole OU1 area (under Alternative 3) or the central portion of the site (under Alternative 2):
 - If passive vents are present in the cap, access will have to be prohibited. How does this fit in with the reuse plan?
 - The OU1 FS is being completed prior to completion of the Superfund Continued Use/Reuse assessment. It would be beneficial if the results of the assessment could be incorporated or considered in the remedy decision.

- 4) Hot spots and principal threat waste – As with LFG and the Matcon area issues, the hot spot investigations should be conducted prior to a remedy decision to ensure that hot spots and principal threat waste can be considered fully during the remedy decision process and appropriately addressed as part of the overall OU-1 remedy.

July 26, 2011

Ohio EPA review of CRA response to Ohio EPA ARAR Comments on the Streamlined Remedial Investigation and Feasibility Study Report for OU1, January 2011 (the Report), for the South Dayton Dump and Landfill Site, Moraine, Ohio (Site)

First, in continued review of ARARs, several additional rules and regulations have been identified that should be considered as ARARs for the South Dayton Dump site:

ORC 3704.05 PROHIBITS VIOLATION OF AIR POLLUTION CONTROL RULES

Prohibits emission of an air contaminant in violation Sec. 3704 or any rules, permit, order, or variance issued pursuant to that section of the ORC.

ORC 3734.02 AIR EMISSIONS FROM HAZARDOUS WASTE FACILITIES

No hazardous waste facility shall emit any particulate matter, dust, fumes, gas, mist, smoke, vapor or odorous substance that interferes with the comfortable enjoyment of life or property or is injurious to public health.

ORC 3767.14 PROHIBITION OF NUISANCES

Prohibition against throwing refuse, oil, or filth into lakes, streams, or drains.

ORC 6101.19 CONSERVANCY DISTRICTS

Board of directors of a conservancy district may make and enforce rules and regulations pertaining to channels, ditches, pipes, sewers, etc. (See attached MCD Site-specific and general Land Use Policy requirements).

ORC 6111.04 ACTS OF POLLUTION PROHIBITED

Pollutions of the waters of the state is prohibited.

OAC3745-16-02 STACK HEIGHT REQUIREMENTS

Established allowable stack height for air contaminant sources based on good engineering practice.

OAC3745-20-07 STANDARD FOR INACTIVE ASBESTOS WASTE DISPOSAL SITES

Establishes emissions and maintenance standards for inactive asbestos waste disposal sites.

OAC3745-25-02 AMBIENT AIR QUALITY STANDARDS

Establishes standards for particulates, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, and lead.

Also, there are two additional Ohio EPA comments, on new, revised text.

Appendix F, OAC 3745-27 and OAC 3745-27-08

The text in the table for these regulations says that Alternative 2 will meet these requirements through a variance. This needs to be corrected. A variance is necessary for the alternate minimum cap grade of less than 5%. However, Alternative 2 will not meet the requirements of OAC 3745-27, specifically OAC 3745-27-08, because of the structure of the MatCon cap. The MatCon cap would require four NCP waivers of the requirements of OAC 3745-27-08, Sanitary Landfill Construction, for the following cap requirements: "18 inch recompacted soil barrier layer, flexible membrane liner, 12" drainage layer, and 30" cap protection layer. An ARAR waiver from USEPA is necessary for the landfill cap requirements the MatCon cap will not comply with. This is in addition to the variance necessary for minimum cap grade.

Appendix F, OAC-27-03

The text in the table for this regulation says that the HELP model will be used to make the demonstration for the variance on cap grade. The HELP model would not be used for this demonstration. The determination will be made based upon a stability analysis and Ohio EPA approval of the landfill cap design.

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Ohio EPA review of revised text and response to comments on Ohio EPA ARAR comments

(For ease of reference, Ohio EPA's comments are presented below in italics followed by CRA's response in plain text and Ohio EPA's evaluation of how and to what extent the comments have been adequately addressed is in bold.)

SPECIFIC COMMENTS ON ARARS FOR TABLES 2.1, 2.2, AND 2.3,
AND THE TABLE IN APPENDIX E

Ohio EPA Comment No. 146

ARAR Tables. Most importantly, reiterating General ARAR Comment #1, for each ARAR, list for each remedial alternative, the affected remedial component and how will the component meet or not meet which specific rule or criteria of the ARAR or TBC.

CRA Response

CRA has revised as requested.

Could not find revision. Did not see any substantive change to ARAR tables. ARAR analysis still did not list affected remedial component for each alternative for each ARAR and discuss how ARAR will be met by that specific component or not.

Ohio EPA Comment No. 147

ARAR Tables. The following state rules and regulations that are listed as "relevant and appropriate" are applicable. Please change the designation of these ARARs within the revised comprehensive ARAR table as requested in General ARAR Comment #1

OAC 3745-15

OAC 3745-17

OAC 3745-21

OAC 3745-39

OAC 3745-50

OAC 3745-51

OAC 3745-52

OAC 3745-53

OAC 3745-270

ORC 3734.02(H)

ORC 3734.041

ORC 3767.13

ORC 6111

OAC 3745-1

CRA Response

CRA has revised as requested.

The revision was not made as requested. Several of the rules and regulations listed above are still listed as “relevant and appropriate” instead of applicable:

OAC 3745-50

OAC 3745-53

OAC 3745-270

ORC 3767.13

OAC 3745-39 is missing from Table 2.1, although it is addressed as applicable in Appendix F.

Ohio EPA Comment No. 148

ARAR Tables. Please remove from the list of ARARs the following state regulations as they do not pertain to the South Dayton Dump and Landfill:

ORC 3714.13

OAC 3745-29

OAC 3745-30

OAC 3745-400

CRA Response

CRA has revised as requested.

Revision was not made as requested. The listed ARARs were not removed; they were just redesignated in Table 2.1 as “relevant and appropriate.”

Ohio EPA Comment No. 149

ARAR Tables. The following guidances which are listed as relevant and appropriate should be listed as “to be considered.”

A Guide to Principal Threat and Low Level Threat Wastes (OSWER Directive 9380.3 06S)

USEPA – Reference Doses

USEPA – Cancer Slope Factors

USEPA – Region 9 Preliminary Remediation Goals

Guidance on Remedial Action for Superfund Sites with PCB Contamination (OSWER Directive 9355.4-01, EPA 540/G-90/007, August 1990)

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 150

ARAR Tables. The descriptions of remedial actions at the Site are inconsistent with the Appendix E table. Under Chemical-Specific ARARs, 40 CFR Part 261 (which is equivalent to OAC 3745-51), it is stated that “any hazardous materials generated during intrusive work will be disposed off-Site.” Then under, 40 CFR Part 262 (which is equivalent to OAC 3745-52) and 40 CFR Part 268 (which is equivalent to OAC 3745-270), it is stated that any hazardous materials generated during intrusive work will be disposed off-Site, or treated and disposed on-Site. Similar contradictory language appears later in the table under the discussion of state hazardous waste regulations. Please revisit the anticipated site actions and revise the table text to be consistent with the planned actions.

CRA Response

CRA has revised as requested.

This comment has been partially addressed. The text for OAC 3745-52 is now consistent; however, the text in Appendix F for OAC 3745-270 now incorrectly states that this requirement is not applicable. OAC 3745-270, rules for land disposal restrictions, are applicable to any hazardous waste disposal. Off-site disposal of hazardous waste has been identified as a potential component of the remedy, so OAC 3745-270 is an applicable ARAR.

Ohio EPA Comment No. 151

ARAR Tables. The analyses for the federal RCRA regulations and the state hazardous waste rules repeatedly include the term “hazardous materials.” These rules apply to hazardous waste, so replace the term “hazardous materials” with the term “hazardous waste.”

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 152

ARAR Tables. The ARAR analyses for the state hazardous waste regulations states that the remediation alternatives do not require generation of hazardous waste. However, excavation of material which will be necessary to install the caps may very well generate hazardous waste. Any waste generated must be evaluated according to the regulations to determine if it is hazardous waste.

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 153

ARAR Tables, 40 CFR Part 403 (OAC 3745-36). Please describe what part of the remedial alternative would include a discharge of wastewater to a POTW or delete this ARAR from the table.

CRA Response

CRA has revised as requested.

Comment not addressed. Could not find the requested revision in the revised document.

Ohio EPA Comment No. 154

ARAR Tables, USEPA Reference Doses, Cancer Slope Factors, and Region 9 Preliminary Remediation Goals. The soil gas pathway (vapor intrusion) will not be addressed "by eliminating direct contact exposure pathway through capping." Please revise or delete this statement.

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 155

ARAR Tables, A Guide to Principal Threat and Low Level Threat Wastes. Please remove the statement "There is not substantial quantities of principal threat waste that will require direct treatment." This statement is not supported by the amount of available site data. As has been discussed in comments from USEPA on the OU1 report, there are potential hot spot areas that need further investigation. The result of that investigation may be the relocation, removal, or in-situ remediation of waste.

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 156

ARAR Tables, OAC 3745-17 These regulations, listed under Chemical-Specific ARARs, are applicable to the remedial actions under evaluation, and several sections of these regulations, OAC 3745-17-02 and 3745 17-05, are listed under Action-Specific ARARS. In addition, sections OAC 3745-17-07 and 3745 17-08 are also applicable.

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 157

ARAR Tables, OAC 3745-21 It is not clear how these regulations apply to the circumstances listed in the analysis. In the revised analysis, discuss how these regulations are also applicable to the landfill gas vents.

CRA Response

CRA has revised as requested.

The revision is insufficient. Landfill gas vents are not addressed.

Ohio EPA Comment No. 158

ARAR Tables, Clean Water Act (ORC 6111) The table states there will be no discharges to surface water. These laws also apply to storm water discharges. Please revise the analysis to also address storm water discharges.

CRA Response

CRA has revised as requested.

Comment not addressed. Could not find the requested revision in the revised document. The text in the Appendix F table continues to state “no surface water discharges” without any discussion of storm water discharge from the caps. In addition, ORC 6111 was deleted from Table 2.1 in this revision.

Ohio EPA Comment No. 159

ARAR Tables, Water Quality ARARs. In the analysis of several water quality regulations cited in the ARAR tables, there is differentiation between Alternative 2 and Alternative 3 stating that the Quarry Pond may be drained prior to capping for Alternative 3. The extent of the solid waste cap is the same for both alternatives which specify that the unsubmerged north face of the Quarry Pond will be included in the cap. Please explain why the difference in design and why the rules would be applied differently to the two alternatives.

CRA Response

The Quarry Pond will be addressed as part of OU2. All discussion of measures applicable to the Quarry Pond has been removed.

The response is does not address the comment. The revisions are incorrect. As noted in the comment above, as part of OU1, the unsubmerged north face of the Quarry Pond will be included in the cap. Therefore, actions impacting the Quarry Pond need to be addressed in the ARAR summary and analysis.

Ohio EPA Comment No. 160

ARAR Tables, 40 CFR Part 81.34, and the state equivalent. This regulation is out-of-date and should be removed from the table since Montgomery County is in attainment for ozone.

CRA Response

CRA has revised as requested.

OK

Ohio EPA Comment No. 161

ARAR Tables, ORC 5301. Please revise the analysis of this rule. An environmental covenant is an institutional control and would be part of the remedy. Also it is not clear what is meant by "as may be needed in future." Please clarify.

CRA Response

CRA has revised as requested.

Comment not addressed. Could not find the requested revision in the revised document

Ohio EPA Comment No. 162

ARAR Tables, USEPA's Superfund Green Remediation Strategy and USEPA's Principles for Green Remediation. Whether the site is a brownfield and its continued use is not relevant to the green remediation strategy. In the revised ARAR analysis, discuss how guidance is relevant to other more appropriate strategies, such as clean diesel for trucks and heavy equipment at the Site.

CRA Response

CRA has revised as requested.

Comment not addressed. Could not find the requested revision in the revised document

Ohio EPA Comment No. 163

ARAR Tables, ORC 3701.344-.347 and OAC 3701-28. Since there is public water supply well on-Site at the Valley Asphalt Plant, these Ohio Department of Health rules and regulations are applicable as ARARs. Please add them to the ARAR analysis table.

CRA Response

Although there is a domestic water supply well at Valley Asphalt, it is not used as a source of potable water. Therefore, while appropriate and relevant, this is not an applicable ARAR.

Comment not addressed. Water from an on-site well is supplied to several of the buildings at Valley Asphalt where there are workers. It has not been demonstrated how potable use is prevented in these buildings; therefore, health department rules and regulations are applicable to the use and condition of the well.

OHIO EPA ATTACHMENT 1, Comment No. 1

EPA Comment 113,

"113. Section 3.2, Screening of Alternatives, Pages 70 to 87, and Appendix C, ARAR, and Appendix D, Costs: The ARARs discussion and tables, both in the text and in Appendix C, are a confused mixture of ARARs and TBCs, none of which are held to be applicable when many are. Some ARARs are classified as TBCs when they are not. The ARARs must be separated from the TBCs (separate tables), and in the ARARs table, each ARAR must be identified as either applicable or relevant and appropriate, with an appropriate, defensible summary as to why (which must also be consistent with all previous FS comments)."

as well as Ohio EPA Comment 2,

"Currently ARARs and TBCs are jumbled together and generally misclassified and misapplied. Some ARARs are classified as TBCs; some TBCs are treated as applicable ARARs, and examples of both are included when they have nothing to do with the scope of the FS for OU 1.

- The ARARs need to be separated out from the TBCs (separate sections of the same table).*
 - The specific remedial component or process (not just the alternative #) affected by an ARAR or TCB needs to be clearly identified as does the specific rule or criteria affecting the component or process.*
 - Each ARAR needs to be classified as either applicable or relevant and appropriate with respect to the component or process. Presently none of the ARARs are held to be applicable when many are. "*
- have not been addressed.*

In this revision, many ARARs which are applicable are listed as relevant and appropriate. And guidance is listed as relevant and appropriate when it should be TBC. The summaries of how the ARARs apply or not to the alternatives are inadequate and sometimes contradictory.

Tables 2.1, 2.2, 2.3, and Appendix E need to be combined and rewritten as a comprehensive table listing the ARAR, a description of the ARAR, whether it is applicable, or relevant and appropriate, or to be considered, what category it falls in, and for each remedial alternative, the affected remedial component and how will the component meet or not meet which specific rule or criteria of the ARAR or TBC.

CRA Response

CRA has revised these tables and appendix consistent with previous comments on the OU RI/FS Report.

The comment above is consistent with previous comments on the OU1 RI/FS Report and has not been addressed. The following is necessary to be able to evaluate the alternatives against the criteria "Compliance with ARARs" -- Tables 2.1, 2.2, 2.3, and Appendix E need to be combined and rewritten as a comprehensive table listing the ARAR, a description of the ARAR, whether it is applicable, or relevant and appropriate, or to be considered, what category it falls in, and for each remedial alternative, the affected remedial component and how will the component meet or not meet which specific rule or criteria of the ARAR or TBC.

Ohio EPA Attachment 1 Comment No. 2

ARAR tables 2.1, 2.2, and 2.3 and Appendix E are long and confusing, and comparable state and federal rules are not applied consistently. Most of the state ARARs apply to programs that have been delegated to the state from the federal government. Including both the state and federal rules and regulations is unnecessarily redundant. According to EPA OSWER Publication 9234.2-05/FS, December 1989, CERCLA Compliance with State Requirements guidance,

"EPA believes that if a State is authorized to implement a program in lieu of a Federal agency, State laws arising out of that program constitute the ARARs instead of the Federal authorizing legislation. A stringency comparison is unnecessary because State regulations under Federally authorized programs are considered to be Federal requirements."

For this reason, the Federal ARARs that are duplicative of State ARARs should be removed from ARAR list. A list of Federal ARARs that can be removed is:

40 CFR Part 6

40 CFR 61

40 CFR Part 81

40 CFR Part 122

40 CFR Part 125

40 CFR Part 141

40 CFR Part 261

40 CFR Part 264

40 CFR Part 262

40 CFR Part 267

40 CFR Part 268

49 CFR Part 171

40 CFR Part 257

40 CFR Part 403

Clean Water Act

Safe Drinking Water Act

Solid Waste Disposal Act, 42 U.S.C. 6901

CRA Response

CRA has revised as requested.

The comment was not addressed completely. The tables have been modified to state that the Federal laws are not ARARs but they are still present in the tables. It was agreed in the conference calls on the OU1 RI/FS report between USEPA, Ohio EPA and the responsible parties that the Federal ARARs would be separated out into a separate table. This change was not incorporated in the revised report.

Ohio EPA Attachment 1 Comment No. 3

The ARAR list should include only those requirements that are ARARs. If rules or regulations are not applicable, or relevant and appropriate, they should not be included in the tables. For example, for OAC 3745-76-03, it is stated that this regulation does not apply because of the demonstration that NMOC emissions will be less than 50 Mg/year, so this regulation should not be included in the table. Other ARARS would apply to OU2 components, i.e. groundwater quality, but not OU1. Please delete those ARARS that are “not applicable” for any of the three OU1 remedy alternatives.

CRA Response

CRA has revised as requested.

This comment has not been addressed. ARARs determined to be not applicable remain in the ARAR tables.

Ohio EPA Attachment 1 Comment No. 4

City of Moraine storm water management ordinances should be listed as TBCs.

CRA Response

CRA has revised as requested.

The comment has not been addressed. The City of Moraine ordinances were included in Table 2.1 but were not included in the ARAR analysis in Appendix F.

Ohio EPA Attachment 1 Comment No. 5

U.S. EPA and Ohio EPA are still in the process of reviewing the FS. Concurrent with that review, U.S. EPA has initiated a series of three party conference calls (U.S. EPA, Ohio EPA, and the PRP group and consultants) to expedite revision of the FS as agency review progresses. Some elements of the alternatives under evaluation remain vague (how potential hot spots will be handled, for example) and Ohio EPA reserves the right to identify additional ARARs and/or revisit existing ARARs once the final configuration of the alternatives is established.

CRA Response

CRA has revised as requested.

The issues underlying this comment remain. This comment still stands.

Miami Conservancy District (MCD) Requirements - South Dayton Dump Site

Embankment slopes	3h:1v or flatter slope preferred for maintenance (2.5h:1v minimum slope accepted)
Embankment material	Clean compactable material with topsoil to support vegetation
Embankment vegetation	Turf-type grass mixture preferred to provide good root structure to resist erosion during high water flows and allow for maintenance; no trees or woody vegetation; no flowering plants or shrubs that have bare soil that could allow concentrated erosion areas or provide shelter for burrowing animals
Fence	Should be at top of slope; slope with fence along bottom cannot be mowed and would be susceptible to damage during high river flows; fence should be on adjacent property or if on MCD the owner would need a permit from MCD providing for installation, maintenance, repair, and replacement
Floodplain requirements	HEC-RAS water surface profile analysis along Great Miami River modeling existing and proposed conditions with MCD discharge = 120,000 cfs to ensure that proposed design would not increase flood profile upstream in Dayton flood protection channel and levees
	The HEC-RAS model can be used to model existing and proposed conditions for 10-year, 50-year, and 100-year discharges to meet City of Moraine requirements and for submission to FEMA for Letter of Map Revision
On-site fill requirements	MCD does not have specific requirements or restrictions for fill on the landfill site; no offset of floodplain storage requirements at this location

**From MCD Land Use Policy, approved by the Board of Directors
4/29/2003 and Revised 1/1/2006**

ARTICLE 204.03 - USE OF FLOOD CONTROL DAMS AND/OR LEVEES

ITEM 204.03.01: Levee excavations requiring open cutting, jacking, and boring will not permitted. Boring beneath the levee and/or river channel will be acceptable subject to District approval.

ITEM 204.03.02: At no time, during the construction, maintenance, modification, and/or removal of any item located on District owned and controlled property will any portion of the District's levee be allowed to remain open for more than **five (5) consecutive days** unless prior written authorization has been granted by the District. Furthermore, closure must be completed prior to the weekend.

ARTICLE 204.04 - CONSTRUCTION WITHIN THE FLOODWAY

ITEM 204.04.01: The construction of either permanent or temporary structures within the Floodway is prohibited. All structures located **within five hundred (500) feet** of the channel must be pre-approved by the District.

ITEM 204.04.02: As a result of continuing development along the Great Miami River and it's tributaries, a Water Surface Profile may be required prior to the approval of any land use or construction, which could permanently change the original, or alter the normal, flow of any channel.

ARTICLE 206.03 - STATEMENT OF PHILOSOPHY

The District's highest priority is to ensure that flood protection channels, levees and related properties are free from any encroachment that could be detrimental to the flood protection system. The District is also committed to maintaining the river corridor areas as natural open green space, free from buildings, commercial developments and structures that could detract from the aesthetic qualities of the river. MCD recognizes, however, that there are transportation, utility and other modifications that may need to be accommodated.

River corridors provide excellent opportunities for aesthetic enhancement, recreational facilities and access to natural areas within urban settings. Well-maintained corridors of green have added to the visual attractiveness of the Miami Valley. Many modifications conform to the requirements of the flood protection system while enhancing the aesthetic, recreational and natural features of the river corridor.

Proposed modifications to the improved channelized areas within the river corridor will be evaluated for their compatibility with the surrounding environment.

It is the District's philosophy that modifications should enhance the river corridors in an unobtrusive manner, complementing the enduring beauty of our river system while providing access to the rivers and recreational opportunities for the citizens of the Miami Valley. The District requires that any proposed modification will include a maintenance plan, as well as a mechanism to replace or remove the modification if it becomes obsolete or in disrepair.

In general, monuments or other plaques of a memorial nature commemorating individuals or events will not be erected, and physical features or structures will not be named for individuals, unless the association between the District and the individual or event is of transcendent importance and where authorized by the Board of Directors. No permanent commercial signage will be allowed within the river corridors.

ARTICLE 206.04 - EVALUATION PROCESS

Any proposed modification to new or existing structures within the improved river channel will be evaluated for their compatibility with the flood protection system. All proposals for modifications within the river corridor areas controlled by the District shall be evaluated according to the following process:

ITEM 206.04.01: SUBMITTALS

- ⌚ All proposals must be submitted in writing and include a detailed plan of the proposed modification. The plan must include sufficient detail to be evaluated for potential impacts on the flood protection system.

- ⌚ Technical studies, including water surface profile analyses using District standards, may be required.

- ⌚ The submittal must include any proposed naming and/or signage plans. Proposed plantings and/or landscaping must comply with the District's planting guidelines (see Section 207). (revised 2/25/2004 as approved by General Manager)

⌚ A Registered Professional Engineer must sign plans for any structure at the time of construction. The submittal must identify any access requirements for construction and maintenance of improvement.

⌚ The submittal must also include a plan of how the modifications will be paid for and maintained.

⌚ In addition, provision shall be provided for the removal of the modifications should they no longer be needed, fail to be maintained to the satisfaction of the District, interfere with the primary objectives of the District, or should the best interests of the District so justify.

ITEM 206.04.02 - REVIEW

⌚ All proposals will be reviewed on a case-by-case basis in a timely manner. The District may request additional information, and may approve or disapprove of specific elements in the proposal. If approved, the District will issue a land use permit stating all terms and conditions of the improvement.

⌚ No work may commence until all parties sign the permit and the fee, if required, is paid.

ITEM 206.04.03 - APPROVAL CONSIDERATIONS: The following items will be considered for any proposed modification. This list is illustrative only and not to be considered all-inclusive.

⌚ Hydraulic Standards

Any modification may not cause an increase of greater than .2 of a foot in the calculated OPF water surface elevation; and in no case may any modification cause the OPF water surface elevation to exceed the Design Official Plan Flood water surface elevation.

⌚ Considerations

Previous modifications that have resulted in an increase in the OPF water surface elevation must be considered in the hydraulic analysis. Mitigation of detrimental impacts of previous modifications may be required.

Previous modifications that have resulted in a reduction in the OPF water surface elevation may be considered in the hydraulic analysis. Proposals will be reviewed on an individual basis to determine what impacts on the water surface profile may be allowed.

⌚ Drift Accumulation (added 2/25/2004 as approved by General Manager)

During the design review of any proposed modifications of existing structures, new crossings or other physical changes to or within the flood protection channels, the District will determine if there is a likelihood of significant drift accumulation or if the design promotes or encourages the collection of drift. In these instances, the staff will use engineering judgment to simulate the amount, size and collection patterns for the drift to estimate the impact on the Official Plan Flood (OPF) water surface profile. Staff will use the current state of science information as a guideline to define drift collection patterns.

If the District determines that the drift accumulation will raise the OPF water surface profile above original design levels, the proposed modification or structure shall be revised to meet the OPF criteria for the flood protection channel.

If the originally constructed design flow conditions cannot be met or improved upon, the proposed modification or construction will not be permitted.

⌚ Maintenance and Access

Any modification that threatens the integrity of the flood protection system may require erosion protection as part of the proposal.

Any modification must not prevent emergency access during high water events.

Any modification that hinders or prevents routine maintenance of the flood protection system will not be allowed.

Any modification that would prevent access or visibility for inspections of the flood protection system will not be allowed.

Proposals for any modification must include an ongoing maintenance plan.

⌚ Aesthetic and other considerations

Proposed modifications will be evaluated for compatibility with the surrounding environment and overall visual impact.

The applicant will be responsible for any safety or security issues arising from the proposed modification.

The proposed modification must comply with all federal, state and local laws, restrictions and zoning codes.

The District may require supporting documentation for any of the above considerations or other concerns not defined in this policy.

ARTICLE 209.06 - RESTORATION OF DAM AND LEVEE SLOPES

ITEM 209.06.01: Compaction of material will be 95% proctor as determined by a certified testing company. Testing will be performed every **four (4) feet** of fill height.

ITEM 209.06.02: Within seven (7) days of construction, all dam and levee slopes disturbed by construction will be seeded as pre-approved and/or directed by the District's Caretaker. Should other methods of restoration prove inadequate, all dams and levee slopes disturbed by construction are to be sodded as directed by the District. The restoration process of all dams and levee slopes disturbed by construction is to be properly monitored and maintained until sufficient turf has been established.